

CLAIMS

1. A method of raising temperature of an object contained hermetically in a container to a predetermined temperature,

5 the method comprising:

a first step for measuring temperature of the container and ambient temperature around the container;

a second step for determining an amount of heat energy necessary for raising the temperature of the contained object
10 up to the predetermined temperature, the determination being based on the container temperature and the ambient temperature;
and

a third step for supplying heat energy to the container, based on a result of the second step.

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2. The method of raising temperature of contained object according to claim 1, wherein the container comprises a receptacle having an opening and a seal for sealing the opening,

wherein the measurement of the container temperature in
20 the first step is performed at the seal.

3. The method of raising temperature of contained object according to claim 1, further comprising a fourth step, performed between the first step and the second step, for
25 estimating temperature of the contained object based on the container temperature and the ambient temperature,

wherein in the second step, the estimated temperature

is checked to be higher or lower than an additional predetermined temperature set lower than said predetermined temperature, and wherein the amount of heat energy to be supplied to the container is determined based on the check
5 result.

4. The method of raising temperature of contained object according to claim 3, wherein in the second step, the amount of heat energy to be supplied to the container is determined
10 so that the amount of heat energy to be supplied to the container per unit time is smaller when the estimated temperature is higher than the additional predetermined temperature, than when the estimated temperature is lower than the additional predetermined temperature.

15 5. The method of raising temperature of contained object according to claim 3, wherein in the fourth step, the estimated temperature is calculated based on a pre-examined correlation between an object-container temperature difference when a
20 predetermined time passes from the beginning of temperature raising and the ambient temperature when the predetermined time passes.

6. The method of raising temperature of contained object
25 according to claim 5, wherein the predetermined time is set for an initial stage of raising the temperature of the contained object up to the predetermined temperature where a temperature

rising rate of the contained object and the container per unit time is relatively large.

7. The method of raising temperature of contained object
5 according to claim 6, wherein the predetermined time is set at a value selected from a range of 10 seconds to 2 minutes after the beginning of temperature raising.

8. The method of raising temperature of contained object
10 according to claim 1, wherein in the third step, the container is brought into contact with a heat medium, and control of the amount of heat energy to be supplied to the container is performed by controlling the temperature of the heat medium.

15 9. The method of raising temperature of contained object according to claim 8, wherein the heat medium is a heating block.

10. A method of raising temperature of contained object sealed
20 in a container, up to a predetermined temperature, by supplying heat energy to the container brought into contact with a heating block, the method comprising:

a first step for measuring ambient temperature around the container immediately before raising temperature;

25 a second step for determining an amount of heat energy necessary for raising the temperature of the contained object up to the predetermined temperature, based on the ambient

temperature; and

a third step for supplying heat energy to the container via the heating block, based on a result of the second step.

5 11. The method of raising temperature of contained object according to claim 10, wherein in the second step, the amount of heat energy to be supplied to the container is controlled by setting temperature of the heating block and setting time for which the set temperature of the heating block is to be
10 maintained.

12. The method of raising temperature of contained object according to claim 10, wherein in the second step, supplying time of the heat energy is divided into a first period from
15 beginning of the supply of the heat energy until a predetermined time passes, and a second period from the end of the predetermined time until the supply of the heat energy ends,
wherein the amount of heat energy to be supplied to the container is regulated so that the amount of heat energy to
20 be supplied per unit time is smaller in the second period than in the first period.

13. The method of raising temperature of contained object according to claim 10, wherein in the second step, the amount
25 of heat energy necessary for raising the temperature of the contained object up to the predetermined temperature is calculated based on a pre-examined correlation,

wherein the correlation is difference between the temperatures of the contained object and the container measured when a predetermined time passes after the beginning of temperature raising, with the ambient temperature measured when a predetermined time passes after the beginning of temperature raising, the predetermined time being set within initial stage of raising the temperature of the contained object up to the predetermined temperature where the temperature rising amount of the contained object and the container per unit time is relatively large.

14. The method of raising temperature of contained object according to claim 14, wherein the predetermined time is set at a value selected from a range of 10 seconds to 2 minutes after the beginning of temperature raising.

15. An analyzing apparatus for analyzing a sample using a container accommodating reagents sealed therein, while raising the temperature of the reagents up to a predetermined temperature, the apparatus comprising:

a first temperature measuring means for measuring temperature of the container;

a second temperature measuring means for measuring ambient temperature around the container;

a heater for supplying heat energy to the container; and

a controller for controlling the heater based on a measurement result at the first and second measuring means.

16. The analyzing apparatus according to the claim 15, wherein the container comprises a receptacle having an opening and a seal for sealing the opening,

wherein the first measuring means measures a temperature
5 of the seal for the container temperature.

17. The analyzing apparatus according to the claim 15, wherein the heater comprises a heat medium brought into contact with the container for supplying heat energy to the container.

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18. The analyzing apparatus according to the claim 17, wherein the heat medium is a heating block.

19. The analyzing apparatus according to the claim 15, further
15 comprising a calculator for providing an estimated temperature of the reagents, based on measurement result at the first and the second temperature measuring means.

20. The analyzing apparatus according to the claim 19, wherein
20 the calculator calculates a compensated value of a measurement by the second measuring means based on a pre-examined correlation between a reagent-container temperature difference over a predetermined time starting when temperature rising starts and the ambient temperature, and then the
25 calculator calculates the estimated temperature based on the compensated value and a measurement by the first measuring means.

21. The analyzing apparatus according to the claim 15, wherein the controller checks if the estimated temperature is higher or lower than an additional predetermined temperature set lower than said predetermined temperature, and the controller
5 controls the heater so that the amount of heat energy to be supplied to the container per unit time is smaller when the estimated temperature is higher than the additional predetermined temperature, than when the estimated temperature is lower than the additional predetermined
10 temperature.

22. An analyzing apparatus for analyzing a sample using a container accommodating reagents sealed therein, the analyzing apparatus, arranged to raise the temperature of the
15 reagents up to a predetermined temperature, comprising:

a heating block brought into contact with the container for supplying heat energy to the container;

a temperature measuring means for measuring ambient temperature around the container;

20 a calculator for calculating an amount of heat energy necessary for raising temperature of the reagents up to a predetermined temperature, based on a result measured by the temperature measuring means immediately before raising temperature; and

25 a controller for controlling the heating block based on a calculation result at the calculator.

23. The analyzing apparatus according to claim 22, wherein the calculator calculates the amount of heat energy necessary for raising temperature of the container up to the predetermined temperature, based on an equation formed in
5 consideration of a pre-examined correlation and on the ambient temperature,

wherein the correlation is difference between the temperatures of the contained object and the container measured when a predetermined time passes after the beginning of
10 temperature raising, with the ambient temperature measured when a predetermined time passes after the beginning of temperature raising, the predetermined time being set within initial stage of raising the temperature of the contained object up to the predetermined temperature where the
15 temperature rising amount of the contained object and the container per unit time is relatively large.